DURHAM
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CITY OF MEDICINE

CITY OF DURHAM | NORTH CAROLINA

Date: **August 5, 2014**

To: Thomas J. Bonfield – City Manager

Through: W. Bowman Ferguson – Deputy City Manager

From: Marvin G. Williams – Director of Public Works

Subject: Contract with Biohabitats, Inc. for Algal Turf Scrubber® Mobile Pilot System Installation and Operation. (Agenda Item #9840)

Executive Summary

The Falls Lake Nutrient Management Strategy requires large reductions of nitrogen and phosphorus (i.e., nutrients) from the City of Durham. The existing rules provide direction for stormwater control measures (SCM's) to be installed to mitigate nitrogen and phosphorus from new development, existing development and agricultural land uses. Stormwater & GIS Services within the Public Works Department had a feasibility study done on the Algal Turf Scrubber® (ATS™) system, which is a patented algae growth and harvesting system that can be sized to fit the available land and water volume. Based on the feasibility study, there are enough potential cost-benefits when compared to traditional SCM's to move forward with an ATS™ pilot study. The feasibility study concluded that the ATS™ system in the Ellerbe watershed to have a potential cost between $19 to $648 per pound for nitrogen removed and $67 to $1,534 per pound of phosphorus removed from the ten areas evaluated. The ATS™ estimate of the dollar amount per pound removed appears to be a fraction of the calculated cost of nutrient removal from the top sixteen SCM's documented in the 2009 Ellerbe Creek Watershed Implementation Plan. The calculated nutrient removal used the capital improvement costs in the Executive Summary, Table ES-5, and SCM performance which estimated the nitrogen removal, to cost $2,450 to $39,573 per pound nitrogen removed and $11,270 to $195,214 per pound of phosphorus removed. The completion of the pilot study will determine the system's projected performance, harvesting /composting projections and system design for a full-scale facility that could, provide significant and cost effective nutrient removal for the City of Durham. The Administration recommends that the City Council authorize the City Manager to execute a contract for a pilot study adjacent to the shoreline of Falls Lake south of Interstate 85 with Biohabitats, Inc.

Recommendation

The Administration recommends that the City Council:

1. To accept a presentation on the proposed project,
2. Authorize the City Manager to execute a contract with Biohabitats, Inc. for Algal Turf Scrubber® Mobile Pilot System Study for nutrient removal in the amount of $358,540.00;
3. Establish a contingency in the amount of $35,000; and,
4. Authorize the City Manager to executed amendments to the contract, as long as the total contract amount, including amendments, does not exceed $393,540.00.

Background

Recognizing the need to identify cost-effective methods of reducing the nutrient inputs to Falls Lake, the City requested proposals describing other technologies that may be used to meet the Falls Lake reduction goals. A RFP was issued in 2012 to solicit proposals for alternate technologies. Two feasibility studies were conducted as a result of that RFP, including a

feasibility study of the Algae Turf Scrubber® (ATS™). The Algal Turf Scrubber® is comprised of a sloped geomembrane floway with an attachment screen that cultivates algae. Water can be pumped from a stream, lake or treatment plant and pulsed across the floway. As water travels down the floway, the "algal turf" or dense mats of algae remove nutrients (phosphorus and nitrogen) and carbon from the water as the algae grow. The treated and filtered water is returned to the original body of water further downstream of the water intake location. The algal biomass is regularly harvested so that it can be converted into a reusable byproduct, such as compost, livestock feed, garden container media, or biofuels. ATS™ are in operation in New York, Texas, and Florida. As an addition to implementing traditional stormwater control devices, the feasibility study concluded that the ATS™ could, potentially, provide significant and cost effective nutrient removal for the City. The Public Works Department decided that there were enough potential cost-benefits at less than a quarter of the cost of traditional methods to move forward with a pilot study

A Request for Proposals was posted on the City of Durham's website from March 17, 2014 through April14, 2014. Three agencies and HydroMentia, Inc. attended the mandatory pre-proposal conference call April 2, 2014 and one proposal was received. A committee of five people reviewed and scored the proposal. The committee decided that Biohabitats, Inc. was qualified and responsive.

NC Division of Water Quality (NCDWQ) developed a nutrient management strategy in an effort to protect and improve the water quality of Falls Lake. The Falls Lake nutrient management rules that became effective in 2011 require a 40% reduction in total nitrogen and 77% reduction in total phosphorus from baseline loads in the upper watershed. With the new Falls Lake nutrient management strategy, Durham faces some of the most stringent water quality regulations in North Carolina. More details on the nutrient management strategy are available at NCDWQ website (http://portal.ncdenr.org/web/wq/ps/nps/fallslake).

Alternatives
The alternative is to deny authorization to negotiate and execute the professional services contract. The ATS™ project is part of the plan for meeting the City's load reduction goals for Falls and Jordan Lake. Should this project not move forward additional conventional SCM's may be needed which are more costly to construct.

Financial Impact
The City of Durham will pay Biohabitats, Inc. $358,540.00, with a contingency of $35,000.00, resulting in a total potential, not to exceed amount of $393,540.00 from the Public Works Capital Improvement Plan project budget (Organization code 4300L045, Object code 725000, Project code LK109).

SDBE Summary
The Equal Opportunity/Equity Assurance Department reviewed the proposal submitted by Biohabitats, Inc. of Raleigh, NC and have determined that they are in compliance with the Ordinance to Promote Equal Business Opportunities in City Contracting. The goals for this project were 0% MSDBE and 3% WSDBE. The WSDBE goal was exceeded.

Attachments
Copy of Draft Contract
SDBE Summary Report
Presentation